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## Notes on the Honey Buzzards of Eastern Asia

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When Stresemann (1940) wrote his valuable review of the genus *Pernis*, he was handicapped by meager material from certain localities. Of the race *ruficollis* (type locality, Bengal) he examined only seven specimens (p. 184), two from India, one from Ceylon, and four from Burma. Three of the latter had been collected on January 3-7 and the fourth on April 4, so all four could have been migrants. We have examined 141 specimens from India, Ceylon, and Burma, and it is perhaps not surprising that this large series has brought to light a few new facts regarding *ruficollis* and related forms.

Before our material is discussed, it is useful to review briefly the recent systematic treatment of this genus. Peters (1931) recognized only one species (*apivorus* Linnaeus), with five subspecies. Stresemann (1940) recognized three species: *apivorus*, *ptilorhyncus*, and *celebensis*. The first is monotypic, the third has two subspecies, and, according to Stresemann, the second can be divided into seven subspecies, two of which he described as new.

The seven subspecies of *ptilorhyncus* can be placed in three groups. One group is represented only by *philippensis* which inhabits Mindanao, Cebu, and Luzon and perhaps other islands in the Philippines. This bird is little known, and we have nothing to add to Mayr's (1939) original descrip-

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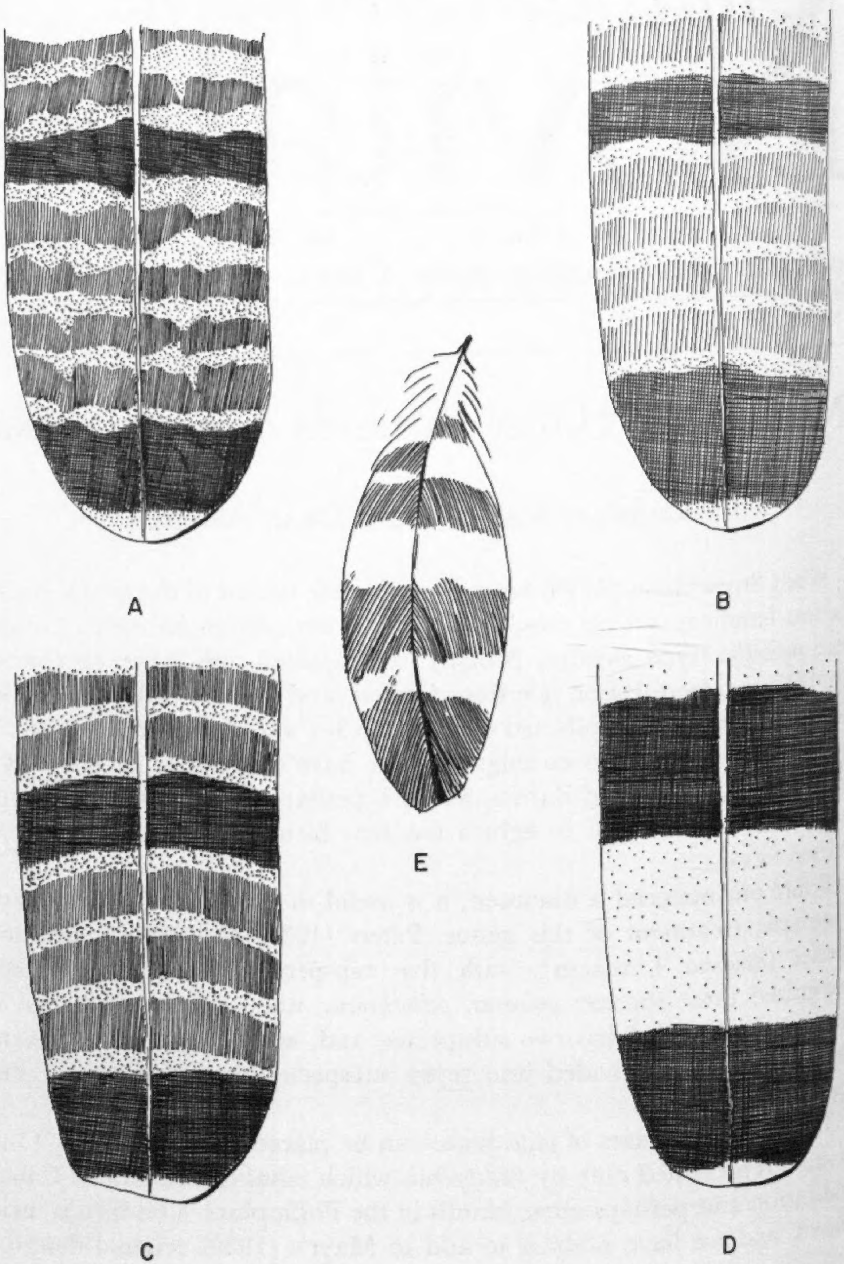


FIG. 1. Patterns (semidiagrammatic) of the top of the central tail feather and of a breast feather in *Pernis ptilorhynchus orientalis* and *P. t. ruficollis*. Key: A, tail pattern of the immature female; B, that of the immature male; C, that of the adult female; D, that of the adult male; E, breast feather in one of the adult plumages.

tion and discussion of it. The second group consists of nominate *ptilorhynchus*, *torquatus*, and *palawanensis*. The first inhabits Java; the second, Malaya, Sumatra, and Borneo; and the third, Palawan. These three races and *philippensis* can scarcely be confused with the races of the third group and are not further mentioned here. Stresemann recognizes three races in the third group (*ruficollis*, *orientalis*, and *gurneyi*), but we believe the latter is a synonym of *ruficollis*. Other names also require comment.

## PLUMAGES AND OTHER CHARACTERS

The plumages of *ptilorhynchus* were discussed by Stresemann (1940). He stated that the races of the first two groups had a retarded "primitive" plumage, the young and adult being similar, but in the two races that concern us (*orientalis* and *ruficollis*), the young differs very distinctly from the adult in appearance, and the sexes can be distinguished by the pattern of the tail (fig. 1).

The tail of immature birds is barred with many bands. The difference between the male and female is relatively slight, but the pattern is more regular and less contrasting in the male. Essentially the adult female retains the juvenal pattern, but it is more regular than in immature birds. The adult male is the most distinct. Its tail pattern consists of two very broad, dark brown bands separated by a pale band which is grayish or brownish gray. The dark bands vary in width from about 4 to 5 cm., while the pale band averages about 6. Two other bands (not shown in fig. 1) are proximal to the three broad bands. One is pale; the other is brown and blends into the root of the tail. These two bands are similar in coloration to the broad bands but are less regular and much narrower, the pale one measuring only half, or much less, of the width of the broad pale band.

The broad pale band is usually vaguely barred with pale brown or more or less marbled with pale brown or gray-brown. We cannot detect a geographical difference in the extent of this marbling, but Stresemann believes the pale band is more darkly marbled in *ruficollis* than in *orientalis*. Probably the pale band becomes purer gray in older males of both races, but this cannot be ascertained without individuals of known age, such as captive or marked birds.

As regards the rest of the plumage, the immature differs from the adult in the coloration of the upper and under parts. Immature birds have a much paler head, are less uniformly brown on the back and wings, which are more mottled, and their secondaries and upper wing coverts are more broadly tipped with buffy white. In the immature the



feathers of the crown, nape, and face are buffy or creamy white, with dark shaft streaks, whereas they are dark brown or sooty gray in the adult except at the base. In other words, the head appears to be concolorous and dark in the adult. The birds that are not adult are buffy or creamy white below, more or less streaked, although the streaking is usually rather slight and sharp. The adult presents two general types of coloration below. In one it is uniformly colored, or virtually so, the throat being sooty gray as a rule, and the rest of the under parts are various shades of brown from cinnamon to dark chocolate. In the other type, the feathers of the breast, abdomen, and flanks are banded brown and white (fig. 1), with more or less conspicuous shaft streaks, resulting in a curious mottled or spotted appearance.

This species varies a great deal individually, as is well known, and this variation is most pronounced on the under parts of both adults and immatures. Many specimens, moreover, are in a plumage more or less intermediate between that of the juvenal and that of the full adult. Thus, the tail pattern may not be fully adult, whereas the rest of the plumage appears to be, or vice versa, or the type of adult that is uniform below is sometimes more or less heavily streaked.

We may add that we cannot detect any evidence of sexual dimorphism other than in the pattern of the tail. Apparently the birds can breed before assuming the adult plumage; at least we have seen specimens in intermediate plumage labeled as "breeding."

Some individuals of both sexes, those that are fully adult as well as those that are unquestionably immature, have a "necklace" of black feathers around the base of the throat. This necklace joins two black streaks which extend down from the sides of the throat and may be more or less interrupted, or the black necklace area may be very extensive. For instance, in an adult female collected on November 18, 1951, in Ceylon, the black pigment spreads to the face and most of the crown and ascends the center of the throat almost to the chin. The necklace is present more often in adults and, as a rule, is better developed in them than in immature birds. We have the impression that this character varies geographically, as the necklace seems to be present more often in *orientalis*, and also (see below) in specimens from Ceylon.

The feathers at the posterior part of the crown and especially those of the nape are elongated to form a sort of ruff. In addition, three or four feathers from the center of the last row are more elongated than the others and, in the adult, are black, or at any rate blackish, and darker than the other feathers. This is all the crest one finds in the races under discussion, though some of the East Indian subspecies have a long one.

The crest may be present in both sexes, but whereas it is present in most examples of *ruficollis* it is as a rule lacking in *orientalis*. For the purpose of this study we regard specimens without at least one elongated black feather as crestless.

Stresemann (1940) used several measurements in his study, but we have restricted ourselves to those that seem to be the most diagnostic, namely, the difference between the length of the longest primary and of the longest secondary (hereafter called the length of the wing tip), the difference between the length of the outer primary and of the longest secondary, and, of course, the length of the wing. We have measured the crest also. The measurements are given in tables 1 and 2.

*Pernis ptilorhyncus orientalis*

*Pernis apivorus orientalis* TACZANOWSKI, 1891, Mém. Acad. Imp. Sci., St. Pétersbourg, ser. 7, vol. 39, p. 50,<sup>1</sup> Kultuk south of Lake Baikal, mouth of the Ussuri at latitude 48° N., and Askold Island, but the type, which is (or was) in the Warsaw Museum, is from the mouth of the Ussuri River, according to Sztolcman and Domaniewski (1927, p. 99).

*Pernis apivorus japonicus* KURODA, 1925, Dôbutsu. Zasshi, vol. 37, pp. 223, 225, Atataka-mura, province of Shinano, Hondo, Japan.

*Pernis apivorus neglectus* KURODA, 1936, Birds of the island of Java, vol. 2, p. 533, near Taihoku, northern Formosa.

This race differs from *ruficollis* in having a more pointed wing, the primaries being actually, as well as proportionately, longer, and in the fact that most individuals lack a crest (tables 1 and 2). In terms of proportions, the length of the wing tip in *orientalis* is about 35 per cent of the length of the wing in males and about 30 in females, as against 23 in male and 22 in female *ruficollis*. The shape of the wing and its greater length are no doubt correlated with the long migration of *orientalis*.

The breeding range of *orientalis* is very large. It extends from about the Yenisei River in Siberia, eastward to Amurland and Sakhalin, and south to Manchuria, Ussuriland, and northern Japan, where it breeds in Hokkaido and northern and central Hondo. Possibly it breeds also in the mountains of northern Korea, but, according to Austin (1948, p. 73), it is recorded from that country only as a rare migrant. It migrates through China to winter from southeastern China and the Philippines to the Indo-Chinese Peninsula, Greater Sundas, and occasionally eastern

<sup>1</sup> Usually cited by the title, "Faune ornithologique de la Sibirie Orientale," instead of the name of the serial.

TABLE 1  
MEASUREMENTS OF ADULTS OF *Pernis ptilorhynchus orientalis* AND *P. t. ruficollis*

| Race and Region    | N    | Wing                         | Wing Tip        | Crest                     |
|--------------------|------|------------------------------|-----------------|---------------------------|
| <i>orientalis</i>  |      |                              |                 |                           |
| China <sup>a</sup> | 8 ♂  | 414-447 (436)                | 138-161 (149.8) | 28, 30 <sup>b</sup>       |
|                    | 4 ♀  | 428-470 (448.5)              | 117-145 (133.8) | Lacking                   |
| Hondo <sup>c</sup> | 8 ♂  | 420-437 (427.5) <sup>d</sup> | 100-150 (121)   | Not indicated             |
|                    | 4 ♀  | 426-450 (435.5)              | 103-123 (114)   | Not indicated             |
| <i>ruficollis</i>  |      |                              |                 |                           |
| Java <sup>e</sup>  | 2 ♂  | 425, 429                     | 105, 105        | 31, 36                    |
|                    | 1 ♀  | 443                          | 93              | 31                        |
| Burma              | 4 ♂  | 403-450 (429.5)              | 82-125 (97.5)   | 28-33 (30) <sup>f</sup>   |
|                    | 6 ♀  | 380-418 (401.5)              | 78-110 (94)     | 27-34 (30) <sup>g</sup>   |
| India              | 32 ♂ | 366-450 (401.3)              | 70-130 (95.3)   | 29-47 (37) <sup>h</sup>   |
|                    | 18 ♀ | 387-432 (410)                | 71-128 (91)     | 34-50 (39.5) <sup>i</sup> |

<sup>a</sup> Migrants, includes measurements of six specimens from Stresemann (1940).

<sup>b</sup> Lacking in six specimens.

<sup>c</sup> Breeding birds measured by Yamashina for Stresemann (1940).

<sup>d</sup> Seven measurements.

<sup>e</sup> Winter visitors measured by Bartels for Stresemann (1940).

<sup>f</sup> Lacking in one.

<sup>g</sup> Present in three, lacking in three.

<sup>h</sup> Present in 27, lacking in seven.

<sup>i</sup> Present in 14, lacking in four.

India whence we have examined two specimens, one taken at Margherita, Assam, on December 10, 1904, the other at "Hungpoo," Bengal, on May 5, 1920. It has straggled to Formosa, where one specimen has been collected. The return flight is late and apparently quite protracted, according to La Touche (1932, p. 201), as the birds are still migrating north between May 12 and June 13 at Shawsheishan Island off the mouth of the Yangtze. A few occasionally winter in southern Japan, but normally, according to Jahn (1942, p. 236), the species arrives in Hondo by the middle of May.

The validity of two races (*japonicus* and *neglectus*) described by Nagamichi Kuroda has not been generally acknowledged. According to him, they differ from *orientalis* only in size, *japonicus* being smaller than *orientalis*, while *neglectus* is still smaller. We have not seen birds from Siberia or Japan (except migrants), but the measurements that have been published show that *japonicus* is not sufficiently well differentiated for its recognition to be warranted. *Neglectus* appears to be invalid also.

Breeding birds from Hondo that were measured by Yamashina for



TABLE 2

RELATIONSHIP OF THE LENGTH OF THE OUTER PRIMARY TO THAT OF THE LONGEST SECONDARY IN ADULT *Pernis ptilorhynchus orientalis* AND *P. t. ruficollis*<sup>a</sup>

|                   |   |   |
|-------------------|---|---|
| <i>orientalis</i> |   |   |
| China             | ♂ | + 32-65 (47) in 8                           |
|                   | ♀ | + 15-40 (31) in 3, molt in 1                |
| Hondo             | ♂ | + 2-20 (8.4) in 6, — by 8 in 1              |
|                   | ♀ | + 23-37 (29) in 3, = in 1                   |
| <i>ruficollis</i> |   |   |
| Java              | ♂ | + 15, 22 in 2                               |
|                   | ♀ | + 11 in 1                                   |
| Burma             | ♂ | = in 2, — by 10, 18 in 2                    |
|                   | ♀ | + by 10 in 1, = in 3, — by 20 in 1          |
| India             | ♂ | + 10-35 (27) in 9, = in 14, — 5-10 (8) in 3 |
|                   | ♀ | + 8-37 (23) in 5, = in 8, — 12-30 (19) in 3 |

<sup>a</sup>The outer primary is longer (+), equal to (=), or shorter (—) than the longest secondary.

Stresemann (1940, p. 182) have the following wing lengths: males, 420, 422, 424, 427, 431, 432, 437 (an additional male with a wing length of "405+" is presumably molting); and females, 426, 429, 437, 450. According to Stegmann (1937, p. 126) honey buzzards from Siberia measure "425-465" and one 495, while Dementiev (1951, p. 324) gives 414-448 (437) for nine males and 413-467 (444) for nine females. These measurements suggest that the birds of Japan average smaller and probably represent the end of a west to east cline of decreasing size, but the overlap in measurements would appear to be great. In fact, the measurements of *orientalis* and of the specimens from Hondo published by Stresemann show an almost complete overlap. We therefore agree with Austin's statement (1953, in Austin and Kuroda, p. 372), "I see no practical value in recognizing the race [*japonicus*]." Clines of decreasing size are the rule in the eastern Palearctic from southeastern Siberia eastward through the Maritime Provinces to Japan. In this instance the type locality of *orientalis* (Ussuri) would be about halfway on the cline, if not nearer to Japan.

In recognizing *japonicus*, Stresemann was influenced by a large series of winter birds from Java with short wings that Bartels measured for him. Stresemann believed them to be wintering *japonicus*, but his measurements (pp. 182-185) show that these specimens from Java have a shorter wing tip than do those that breed in Hondo. The length of the wing tip does not differ essentially from that of *ruficollis* (table 1), and it seems to us that they are perhaps wintering *ruficollis*, if not from India, then from Burma. The only specimen we have actually seen from Java, the imma-

ture in the Rothschild Collection that was listed by Stresemann as a wintering "*japonicus*," is identical in every way with *ruficollis*.

We may add that Stresemann no longer recognizes *japonicus* and has also synonymized *neglectus* with *orientalis* in his manuscript for the birds of prey for the proposed new edition of volume 1 of the Peters "Check-list of birds of the world." In the first edition by Peters (1931) *japonicus* was synonymized with *orientalis*.

Kuroda (1936) based *neglectus* on eight specimens from Formosa, Korea, and southern Manchuria, and on the measurements of two others of unspecified age and sex that he found reported in the literature (though where, he does not say). No dates are given for any of these specimens, and, with the exception of Manchuria, they were collected in countries where the species occurs only as a migrant or winter visitor. The specimen from Formosa that Kuroda selected for the type of *neglectus* is the only one ever collected on that island (presumably during the winter), according to Hachisuka and Udagawa (1951, p. 99). It is an adult male with a wing length of 415. The only other adults measured by Kuroda are two females from Manchuria with wing lengths of 405 and 419. We grant that these birds have a short wing, but we believe, nevertheless, that they are *orientalis*.

Kuroda (1936) stated that *neglectus* "probably breeds in South Manchuria and Korea," but the species is known from Korea only as a rare migrant, and the measurements we have found for Manchuria are larger than those cited by Kuroda. We could find only two records for that country, an adult breeding male with a wing length of 424 collected by Piechocki (1959, p. 171), and an adult female reported by Kuroda (1932) with a wing length of "420 (right)–425 (left)." The species seems to be rare in Manchuria, as the last specimen was the only one that Meise (1934, p. 61) could trace for that country.

### *Pernis ptilorhynchus ruficollis*

*Pernis ruficollis* LESSON, 1830, *Traité d'ornithologie*, p. 77, "*patrie inconnue*" [Bengal].

*Pernis ptilorhynchus gurneyi* STRESEMANN, 1940, *Arch. f. Naturgesch.*, new ser., vol. 9, p. 168, Lamaing near Mandalay, Burma, on January 17, 1938.

The characters of *ruficollis* are discussed above. It breeds in India from the Punjab eastward, and from about 4000 feet in the foothills of the Himalayas south to probably Ceylon, in Burma and east to perhaps Yunnan, and south to perhaps northern Siam and northern Tonkin,



but there are no breeding records for Yunnan, Siam, and Tonkin, and all the specimens on record were collected either during the winter or outside the breeding season. It is sometimes sedentary, sometimes migratory, migrating to Ceylon, southern Indochina, Malaya, and, we believe, to Java (see above).

The status in Ceylon is not clear. Whistler (1944, p. 250) states that *ruficollis* is a "winter visitor [to Ceylon] and doubtfully resident . . . arriving about November and December but rather irregular in its numbers from year to year . . . A certain number are possibly resident and this fact requires investigation in case there is a separate island race." Henry (1955, p. 229) repeats the statement made by Whistler, adding that it leaves "about April," but he is more positive concerning the breeding. He says, ". . . As a few may be seen up-country in every month, and pairs have been observed mating and performing courting flights, it seems certain that it breeds in Ceylon to some extent." The fact remains, however, that no nests have been found.

We have seen a total of 13 specimens from Ceylon, and, with the exception of one immature bird taken on June 9, 1889, all were collected during the winter, or not within the breeding season, and hence may be northern migrants. They may all be visitors, but it is of interest to note that a greater percentage of them have a necklace than is the case with birds taken in India. However, the bird taken on June 9, perhaps the only native, has none.

Stresemann states that *gurneyi* differs from *ruficollis* in being smaller and having no crest, or almost none. He had only two specimens, both immature females, with a wing length of 377, 385, but he adds that other birds with short wings have been reported from Burma, for instance, two immature females with wing lengths of 377 and 397 that had "no marked crests." These were taken during the winter. We can add six more immature females taken in Burma during the winter which measure 355, 378, 403, 405, 415, 418; three of these six have no crest.

Thus these 10 females measure 355-418 (391) and average smaller than a series of 22 immature females from India which measure 360-423 (400.5), but actually 30 of the 32 measurements overlap, and 12 of the females from India have no crest. Ten immature males from India, only two of which have a crest, measure 360-412 (391.4).

In other words, *gurneyi* cannot be differentiated from *ruficollis*, and it is significant that no one has been able to define its range satisfactorily. Stresemann states that it is a winter visitor to Burma which probably breeds in Siam, but, as stated above, there are no breeding records for that country. The birds reported from Siam by Deignan (1945, pp. 58-61)

were taken during the winter or were migrants. The measurements of those that he calls *gurneyi* fall within the range of individual variation of the birds of India, with one exception, an immature male with a wing length of 345. It is possible, however, that a cline is involved and that those examples of *ruficollis* from the southeastern part of the range in the Burmese countries are somewhat smaller than those from farther north.

No intergradation has been shown between *ruficollis* and the long-crested *Pernis ptilorhyncus torquatus* of Borneo, Sumatra, and Malaya. Possibly the latter is a separate species, with *ptilorhyncus* (Java), *palawanensis* (Palawan), and perhaps *philippensis* as races. As implied above, there is also a gap in China, Formosa, and Korea between *ruficollis* and *orientalis*. It is highly unlikely that these two are species, but it must be kept in mind that *P. apivorus* of Europe and western Asia, though quite similar to *ptilorhyncus* and contiguous with it geographically, has a totally different migration and is probably a separate species.

### SUMMARY

The systematics of the honey buzzards of eastern Asia are discussed. Two races (aside from those of the East Indies) are recognized: *Pernis ptilorhyncus orientalis* in Japan and northeastern Asia, where it is highly migratory, and, separated from it by a gap, *P. p. ruficollis* of India, Ceylon, and the Indo-Chinese Peninsula, which is somewhat migratory.

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